AFS

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Russell J. Apfel	Group Art Unit: 2665
Serial No.: 09/778,291	Examiner: DANIEL J. RYMAN
Filed: February 6, 2001	Atty. Dkt. No.: 2069.008800/TT3778
For: METHOD AND APPARATUS FOR IMPROVING GAIN BANDWIDTH PATHS	CUSTOMER NO. 23720

APPEAL BRIEF

CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8	
DATE OF DEPOSIT:	December 5, 2005
I hereby certify that this paper or fee is being deposited with the United States Postal Service with sufficient postage as "FIRST CLASS MAIL" addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.	
Signature	

MAIL STOP APPEAL
BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

On September 28, 2005, Appellant filed a Notice of Appeal in response to a Final Office Action dated June 28, 2005, issued in connection with the above-identified application. In support of the appeal, Appellant hereby submits this Appeal Brief to the Board of Patent Appeals and Interferences.

Since the Notice of Appeal for the present invention was received and stamped by the USPTO Mailroom on October 3, 2005, the two-month date for filing this Appeal Brief is Saturday, December 3, 2005. This Appeal Brief is being filed on Monday, December 5, 2005 (since December 3, 2005 falls on a Saturday), therefore, this paper is believed to be timely filed.

12/13/2005 DEMMANU1 00000050 501591 09778291
01 FC:1402 500.00 DA

If an extension of time is required to enable this paper to be timely filed and there is no separate Petition for Extension of Time filed herewith, this paper is to be construed as also constituting a Petition for Extension of Time Under 37 CFR § 1.136(a) for a period of time sufficient to enable this document to be timely filed.

The Commissioner is authorized to deduct the fee for filing this Appeal Brief ($500.00) from Legerity, Inc. Deposit Account No. 50-1591/TT3778. No other fee is believed to be due in connection with the filing of this document. However, should any fee under 37 C.F.R. §§ 1.16 to 1.21 be deemed necessary for any reason relating to this document, the Commissioner is hereby authorized to deduct said fee from Legerity, Inc. Deposit Account No. 50-1591/TT3778.[1]

I. REAL PARTY IN INTEREST

The present application is owned by Legerity, Inc.

II. RELATED APPEALS AND INTERFERENCES

Appellant is not aware of any related appeals and/or interferences that might affect the outcome of this proceeding.

III. STATUS OF CLAIMS

Claims 1-25 remain pending in this application.

The Examiner rejected claims 1-25 under 35 U.S.C. § 103(a), as being unpatentable over U.S. Patent No. 6,507,606 ***(Shenoi)***, in view of U.S. Patent 6,870,888 ***(Shapiro)***.

[1] In the event the monies in that account are insufficient, the Director is authorized to withdraw funds from Williams, Morgan & Amerson, P.C. Deposit Account No. 50-0786/2069.0008800.

The claims currently under consideration, *i.e.*, claims 1-25 are listed in the Claims Appendix.

IV. STATUS OF AMENDMENTS

After the Final Rejection, claim amendments were made and have been entered. However, the Examiner rejected the claims as amended.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Embodiments of the present invention provide for a controller in a line card of a subscriber line interface circuit (SLIC) for affecting the condition of communication signals. The present invention provides for controlling the gain and accuracy of a plurality of signals in both directions, the upstream direction (*i.e.* from a subscriber station to the central office) and the downstream direction (*i.e.* from the central office to the subscriber station). *See* Specification, page 9, lines 15-20.

As illustrated in Figure 3, one embodiment of an implementation of a gain/bandwidth controller 320 as taught by the present invention is provided. In one embodiment, the line card 210 comprises a subscriber line interface circuit (SLIC) 310. The SLIC 310 is capable of performing a variety of functions, such as signal gain functions, battery feed, overload protection, polarity reversal, on-hook transmission, and current limiting. *See* Specification, page 9, lines 9-13.

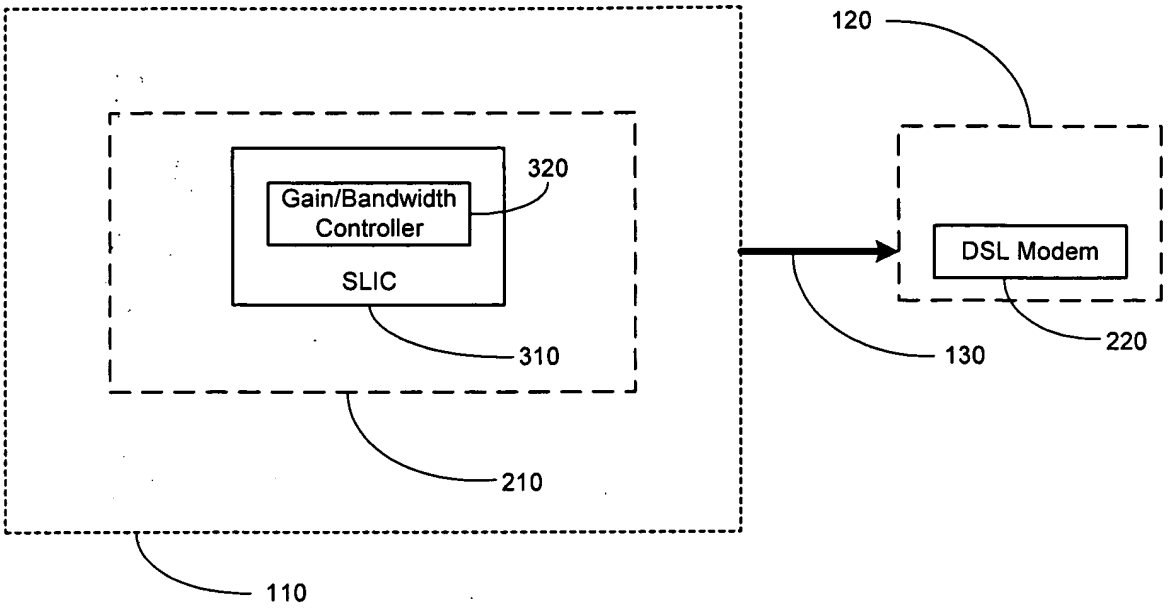

FIGURE 3

In one embodiment, the SLIC 310 comprises a gain/bandwidth controller 320 that is capable of controlling the gain of a plurality of signals. In one embodiment, the gain/bandwidth controller 320 controls the gain and accuracy of a plurality of signal in both directions, the upstream direction (*i.e.* from the subscriber station 120 to the central office 110) and the downstream direction (*i.e.* from the central office 110 to the subscriber station 120). Figure 4 illustrates one embodiment of a more detailed depiction of the gain/bandwidth controller 320. *See* Specification, page 9, lines 15-22.

Figure 4 illustrates one embodiment of a more detailed depiction of the gain/bandwidth controller 320. As illustrated in Figure 4, the gain/bandwidth controller 320 comprises a signal path separator 410, a first gain/bandwidth circuit 420, a second gain/bandwidth circuit 430, an Nth gain/bandwidth circuit 440, and a summer 450. In one embodiment, the signal path separator 410 is capable of generating a separate signal path for a plurality of signals based upon

the bandwidth requirement of a particular signal. The separated signal paths are sent to the first through Nth gain/bandwidth circuit 420, 430, 440. The first through Nth gain/bandwidth circuit 420, 430, 440 then performs an appropriate gain upon the signal they receive, respectively. For example, the ringing signal may need a gain of 140, whereas a voice signal may only need a gain of 2 or 3. The gain that is applied to the signal paths may be determined by a plurality of factors that are known to those skilled in the art, including the approximate total length of the signal path of a particular signal and the required accuracy of a particular signal. *See*, Specification page 9, line 23-page 10, line 9.

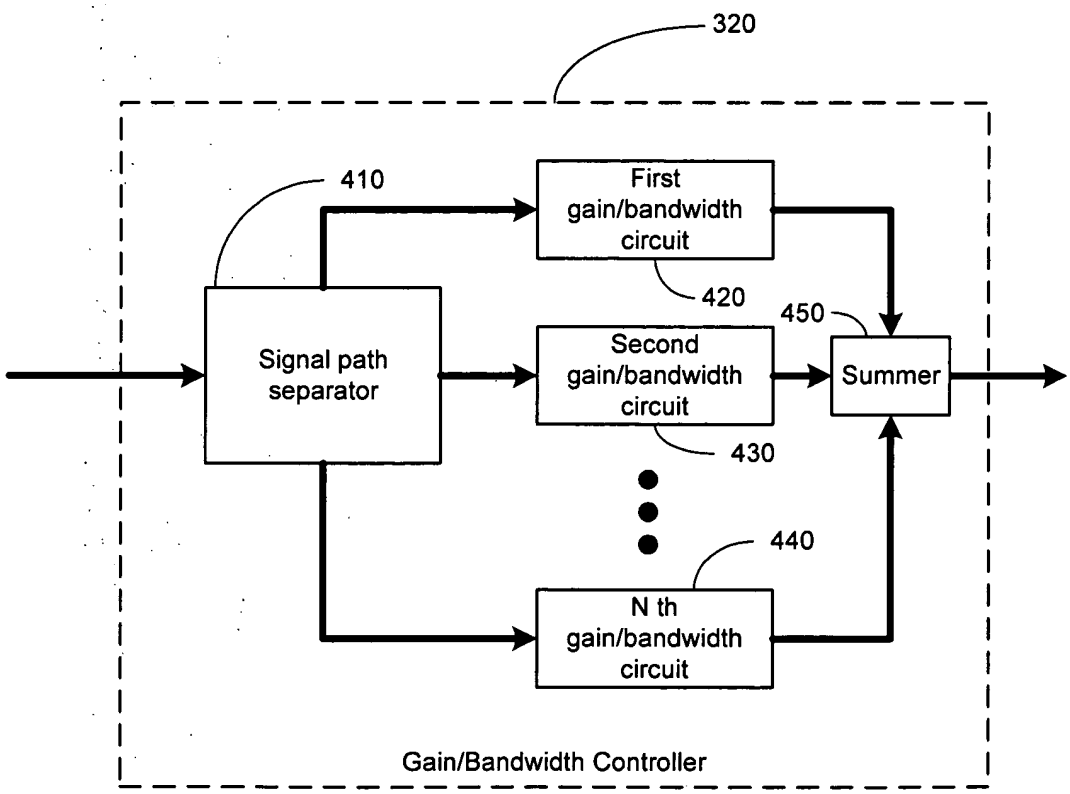

FIGURE 4

The signal path separator 410 sends separated signals path to one of the first through Nth gain/bandwidth circuit 420, 430, 440. For example, the signal path separator 410 is may separate a voice signal that has a bandwidth requirement of 200 Hertz to 20 KiloHertz. The signal path

separator 410 then sends the signal path that contains the voice signal to the first gain/bandwidth circuit 420, where a gain of approximately 2 or 3 is applied onto the signal. The signal path separator 410 may separate a DC or ringing signal that has a bandwidth requirement of 100 Hertz to 200 Hertz. The signal path separator 410 then sends the signal path that contains the DC or ringing signal to the second gain/bandwidth circuit 430, where a gain of approximately 140 is applied. As an another illustrative example, the signal path separator 410 may separate a data signal that has a bandwidth requirement of 500 KiloHertz to 5 Megahertz. The signal path separator 410 then sends the signal path that contains the data signal to the Nth gain/bandwidth circuit 440, where a gain of approximately 10 is applied. The gain/bandwidth controller 320 is capable of separating other types of signal and applying an appropriate gain upon the signal path. *See*, Specification page 10, lines 11-24.

Once the gain/bandwidth controller 320 separates the signal paths and applies an appropriate gain onto the signal on the signal path, the signals from multiple signal paths are summed by the summer 450. Once the summer 450 sums the signal from the first through Nth gain/bandwidth circuit 420, 430, 440, the signal is sent off the gain/bandwidth controller 320 for normal processing. The gain/bandwidth controller 320 can be used to apply separate signal gains corresponding to a plurality of bandwidth and accuracy requirements in the upstream and the downstream direction. The utilization of the gain/bandwidth controller 320 allows for improved noise performance of the line card 210. Furthermore, use the gain/bandwidth controller 320 improves the accuracy of communication signals because signal accuracy issues can be addressed upon an individual signal basis. For example, the data path signal may not need as much accuracy as the DC signal or the voice signal, therefore separate gains may be applied on the data, voice, and DC signals. *See*, Specification page 11, lines 1-12.

The method associated with embodiments of the present invention includes performing a gain/bandwidth control process, as illustrated in Figure 6 and 7. Figure 6 illustrates a flowchart depiction of one embodiment of the methods in accordance with the present invention.

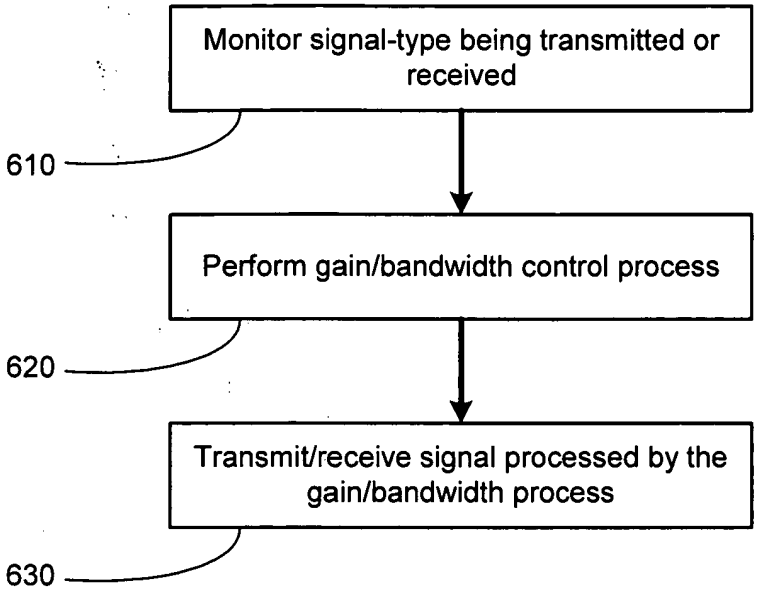

FIGURE 6

The signal that is being transmitted or received by the line card 210 is monitored, as described in block 610 of Figure 6. In one embodiment, the signal that is being transmitted or received by the line card 210 is monitored to determine the type of signal being received or transmitted, the bandwidth requirements of the signal, and the approximate length of the signal path which carries the signal. Subsequently, a gain/bandwidth control process is performed, as described in block 620 of Figure 6. Figure 7 illustrates a more detailed depiction of one embodiment of the gain/bandwidth control process described in Figure 6. *See* Specification, page 15, lines 9-16.

Turning now to Figure 7, an approximate length of the total signal path of the signal being analyzed is determined, as described in block 710. The bandwidth requirement of the signal that is being analyzed is determined, as described in block 720 of Figure 7. For example, if a DC or a ringing signal is detected, the bandwidth requirement is approximately 100 Hertz to 200 Hertz. If a voice signal is detected, the bandwidth requirement is approximately 200 Hertz to 20 KiloHertz. As another illustrative example, if a data signal is detected, bandwidth requirement is approximately 500 KiloHertz to 5 MegaHertz. In one embodiment, the signals that are being analyzed are separated by bandwidth requirements, gain requirements, and accuracy requirements, as described in block 730 of Figure 7. *See* Specification, page 15, line 18–page 16, line 2.

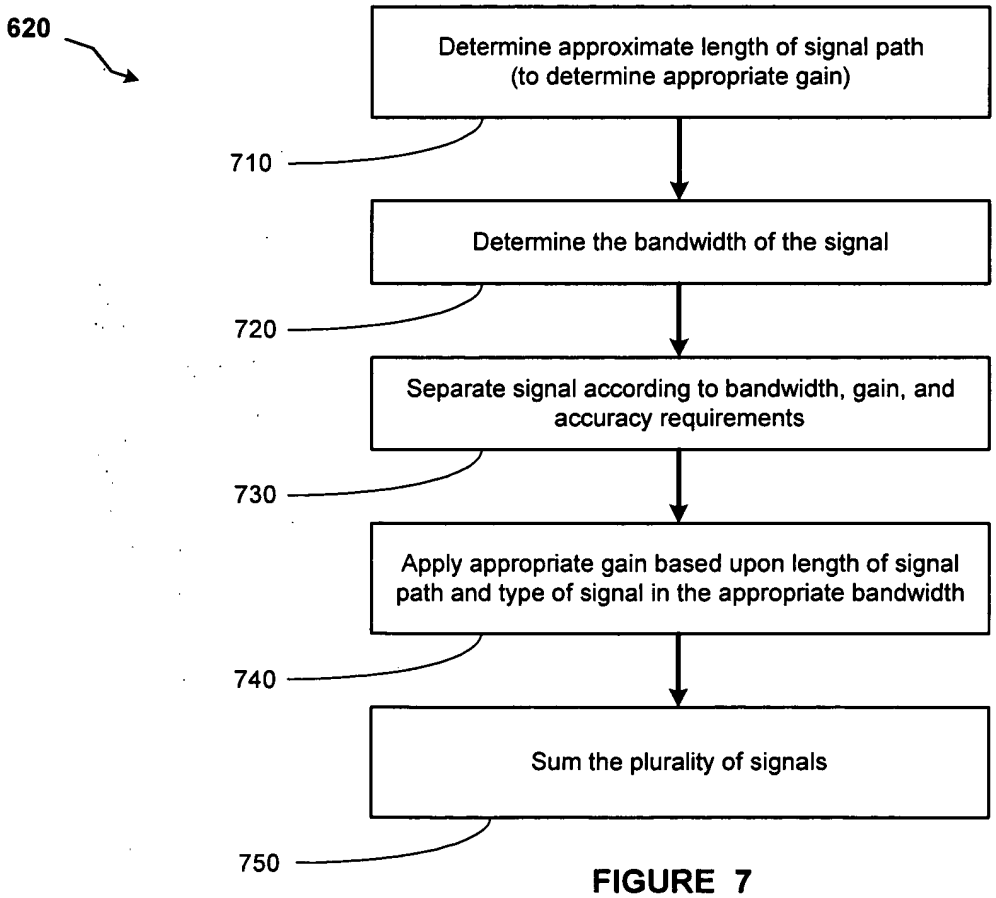

FIGURE 7

Once the signals that are being analyzed are separated, an appropriate gain is applied to the separated signals, as described in block 740 of Figure 7. For example for a data signal, a gain of approximately 10 is applied. For a voice signal, a gain of approximately 2 to 3 is applied. For a DC or a ringing signal, a gain of approximately 140 is applied. One the appropriate respective gains are applied to the signals, the signals are summed, as described in block 750 of Figure 7. The completion of the steps described in Figure 7 substantially completes the implementation of the gain/bandwidth control process described in block 620 of Figure 6. Turning back to Figure 6, once the gain/bandwidth control process is substantially complete the processed signal is transmitted from the line card 210, or received into the line card 210, as described in block 630 of Figure 6. *See* Specification, page 16, lines 4-13.

The apparatuses 110, 120, 130 can be integrated in a system capable of transmitting and receiving signals having a voice band and a data band. The teachings of the present invention may be implemented in a line card 210 that supports both POTS and ADSL technologies. *See* Specification, page 16, lines 15-18.

In one aspect of the present invention, a method is provided for improving at least one gain bandwidth path. At least one signal being transmitted is monitored. A gain/bandwidth control process is performed upon the monitoring of the signal. Performing the gain/bandwidth control process includes controlling a gain of a portion of said signal based upon determining a bandwidth requirement of a signal path associated with the portion of said signal. *See* Specification, page 15, lines 8-16.

In another aspect of the present invention, an apparatus is provided for improving at least one gain bandwidth path. The apparatus taught by the present invention comprises: a first circuit

portion capable of driving a signal onto a subscriber line (130); and a second circuit portion electrically coupled with the first circuit portion, wherein the second circuit portion is capable of separating a plurality of signal paths based upon at least one characteristic of the signal path for applying an appropriate gain factor upon the signal path. *See* Specification, page 15, line 8 through page 16, line 13.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 1-25 stand rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,507,606 (***Shenoi***), in view of U.S. Patent 6,870,888 (***Shapiro)***.

VII. ARGUMENTS

The Examiner heavily relies on ***Shenoi*** and ***Shapiro*** to attempt to argue obviousness of all of the elements of the claims of the present invention. ***Shenoi*** is directed to an asymmetrical system being used for providing greater data transmission. ***Shenoi*** clearly does not disclose all of the claims of the present invention. ***Shenoi*** does not disclose or make obvious determining a bandwidth requirement for a signal path associated with a portion of a signal for controlling a gain of the portion of the signal, as called for by various claims of the present invention. Further, ***Shapiro*** does not make up for the deficit of ***Shenoi***.

Shapiro is directed to reducing the number of symbol errors that result from individual channel errors by providing using symbol-oriented correction methodologies. ***Shapiro*** does not disclose or make obvious monitoring a signal and performing a gain/bandwidth control process based upon the signal, which includes determining a bandwidth requirement of a signal path.

Accordingly, ***Shenoi***, Shapiro or their combination do not teach, disclose, or make obvious all of the elements of the claims of the present invention.

The specific claims of the present invention are discussed below.

A. Claims 1-5, 12-16, and 24 (Group I Claims) Are Not Rendered Unpatentable under 35 U.S.C. § 103(a) by *Shenoi* in view of *Shapiro*.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or to combine reference teachings. Third, there must be a reasonable expectation of success. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Appellant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142. Moreover, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); M.P.E.P. § 2143.03.

With respect to the alleged obviousness, there must be something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561 (Fed. Cir. 1986). In fact, the absence of a suggestion to combine is dispositive in an obviousness determination. *Gambro Lundia AB v. Baxter Health-*

care Corp., 110 F.3d 1573 (Fed. Cir. 1997). The mere fact that the prior art can be combined or modified does not make the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990); M.P.E.P. § 2143.01. The consistent criterion for determining obviousness is whether the prior art would have suggested to one of ordinary skill in the art that the process should be carried out and would have a reasonable likelihood of success viewed in the light of the prior art. Both the suggestion and the expectation of success must be founded in the prior art, not in the Appellant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991; *In re O'Farrell*, 853 F.2d 894 (Fed. Cir. 1988); M.P.E.P. § 2142.

Appellant respectfully asserts that the Examiner did not meet the legal standards to reject the claims of the present invention under 35 U.S.C. § 103(a) because the prior art references (***Shenoi*** and ***Shapiro***) do not teach or suggest all the claim limitations of the claims of the present invention. Additionally, the Examiner has not provided sufficient evidence or arguments that there is a suggestion that one skilled in the art would have been motivated to combine the references (***Shenoi*** and ***Shapiro***). In fact, Appellant provides arguments that ***Shenoi*** and ***Shapiro*** would not have been combined by one skilled in the art. Therefore, the Examiner did not meet the legal standards to establish a *prima facie* case for obviousness under 35 U.S.C. § 103(a) with regarding to claims 1-5, 12-16, and 24 of the present invention.

Appellant respectfully asserts that a *prima facie* case of obviousness has not been established in light of the arguments provided herein. Appellant respectfully asserts that ***Shenoi,*** in combination with ***Shapiro,*** does not teach, disclose, or suggest all of the elements of claim 1 of the present invention, as amended. There are several flaws in the rejections proposed by the Examiner and are discussed below.

In the Advisory Action dated September 16, 2005, the Examiner again misconstrued the disclosure of ***Shenoi*** to argue obviousness of various elements of the claims of the present invention. For example, if the Examiner asserted that ***Shenoi*** discloses that its invention provides a gain adjustment as a function of an attenuation of a communication signal. However, Appellant respectfully asserts that the mere attenuation adjustment of the gain based on the attenuation does not read upon various elements of the claims, *e.g.*, controlling the gain of a portion of the signal based upon determining a bandwidth requirement of a signal path. The disclosure of ***Shenoi*** is merely directed to a band pass filter that isolates a frequency band from 10 kHz to 44 kHz and amplifying the signal, which may merely include introducing a gain for compensation of attenuation caused by 6,000 feet of cable at 27 kHz. However, ***Shenoi*** simply does not disclose gain adjustment of a portion of a signal based on a determination of a bandwidth requirement for a signal path. ***Shenoi*** simply does not disclose such a determination.

Additionally, ***Shapiro*** does not make up for this deficit, as described in detail below. In the Advisory Action dated September 19, 2005, the Examiner asserted that ***Shapiro*** teaches testing a channel in order to determine the gain and the bandwidth that each channel is capable of carrying. ***Shapiro*** merely discloses channel testing to determine possible transmission error rates. *See*, for example, column 6, lines 46-61. ***Shapiro*** is directed to reducing the number of symbol errors that result from individual channel errors. However, ***Shapiro*** does not disclose or make obvious, alone or in combination with ***Shenoi,*** all of the elements of the claims of the present invention. ***Shapiro*** is merely directed to a disclosure of a table that lists channel numbers, which provides a sequence in which communicational channels are to be loaded with a predetermined number of bits. *See*, for example, column 7, lines 55-62. Without providing evidence or sufficient arguments, the Examiner argued that it would be implicit, or at least

obvious, that the gain and bandwidth of a channel are functions of one another. Regardless of whether gain and bandwidth of channels are functions of one another, ***Shapiro*** simply does not disclose or make obvious controlling the gain of a portion of the signal based upon the bandwidth requirement of a signal path as called for by claims of the present invention. These arguments are further detailed below.

There are several flaws in the rejections proposed by the Examiner. For example, the Examiner suggests that ***Shenoi*** discloses or makes obvious monitoring a signal and performing a gain/bandwidth control process based upon monitoring the signal. However, Appellant respectfully asserts that ***Shenoi*** does not disclose this subject matter. ***Shenoi*** merely discloses a band pass filter that isolates a frequency band from 10 kHz to 44 kHz and amplifying the signal. ***See*** column 8, lines 3-5. ***Shenoi*** then discloses introducing a gain for compensation of attenuation caused by approximately 6,000 ft. of cable at 27 kHz. *See* column 8, lines 5-8. Therefore, ***Shenoi*** merely asserts filtering a signal and applying a predetermined gain to counteract an attenuation caused by a 6,000 ft. of cable at 27 kHz. ***Shenoi*** does not disclose or make obvious performing the gains/bandwidth control process called for by claim 1 of the present invention.

Shenoi discloses the asymmetrical system being used for providing greater data transmission. Although ***Shenoi*** discloses two circuits, each having different amplifications, ***Shenoi*** clearly does not disclose all of the elements of claim 1 as amended. For example, ***Shenoi*** clearly does not disclose determining a bandwidth requirement for a signal path associated with a portion of a signal for controlling a gain of the portion of the signal, as called for by claim 1 (as amended) of the present invention. Previously, the Examiner cited a passage in ***Shenoi*** disclosing the band pass filter BPF that isolates the frequency bands from 10khz to 44khz to

provide an amplification by amplifier AMP-U. *See* col. 8, lines 3-7. The Examiner also cited a gain that is used to address the attenuation of approximately 6000 feet of cable at 27khz. *See* col. 8, lines 5-8. The Examiner also pointed to the downstream signal being amplified by AMP-D after a high pass filter HPF separates the band above 60 khz. *See* col. 8, lines 9-11. However, these passages merely refer to circuits that address filtering of the signal to amplify a downstream signal and an upstream signal. ***Shenoi*** merely discloses amplification for addressing the attenuation of 6000 feet of cable and 27khz for the upstream signal and at 600khz for the downstream signal. Nowhere in ***Shenoi*** is it disclosed or suggested determining a bandwidth requirement of a signal path.

Shenoi does not disclose the subject matter of the gain of a portion of the signal being controlled based upon a determination of a bandwidth requirement of a signal path, as called for by claim 1 of the present invention. ***Shenoi*** simply does not disclose controlling the gain based upon determining of a bandwidth requirement. ***Shenoi*** merely discloses providing filter for specific ranges of frequencies for downstream and upstream amplification. ***Shenoi*** clearly does not determine any bandwidth requirements, as called for by claim 1 of the present invention. Therefore, for at least the reasons cited above, all of the elements of claim 1 are not taught, disclosed, or suggested by ***Shenoi***. Additionally, ***Shapiro*** does not make up for the deficit of ***Shenoi***.

The Examiner asserts that ***Shapiro*** performs control over the gain based on specific bandwidth requirements. However, Appellant respectfully asserts that ***Shapiro*** does not perform a gain/bandwidth control, as called for by claim 1 of the present invention. ***Shapiro*** does not disclose or make obvious monitoring a signal and performing a gain/bandwidth control process based upon the signal, which includes determining a bandwidth requirement of a signal path.

Appellant respectfully asserts that ***Shapiro*** is directed to reducing the number of symbol errors that result from individual channel errors by providing using symbol-oriented correction methodologies. *See* column 4, lines 8-23. However, ***Shapiro*** does not provide sufficient disclosure to make obvious, alone or in combination with ***Shenoi***, all of the elements of the claims of the present invention.

Shapiro provides a table which includes communication channels listings and the respective number of bits to be loaded onto each channel listed in the table. *See* column 7, lines 55- column 8, line 1, Figure 3. The table also provides predetermined respective transmission gains to be used with the respective data bits via the respective channels. *Id.* In other words, ***Shapiro*** merely provides a disclosure of a table (see Figure 3 of ***Shapiro***) that lists channel numbers, which provides a sequence in which the communication channels are to be loaded with predetermined number of bits from a serial input data bit stream 100. *See* column 7, lines 55-62. These channels are then associated with a list of number of bits that are transmitted on these channels and a predetermined gain that corresponds to the channel. However, there's no disclosure or in ***Shapiro*** that would make obvious the concept of monitoring a signal and performing a gain/bandwidth control based upon monitoring of the signal, which includes the gain of at least a portion of the signal based upon determining a bandwidth requirement.

Shapiro does not disclose determining a bandwidth requirement. ***Shapiro*** merely discloses listing channels, the respective number of bits to be loaded onto the channels, and a predetermined gain for the channels. *See* Figure 3. However, ***Shapiro*** simply does not make obvious, alone or in combination with ***Shenoi***, the subject matter of performing the gain/bandwidth control process based upon monitoring of the signal, which includes determining a bandwidth requirement of a signal path associated with a portion of the signal (as called for by

claim 1 of the present invention). Simply providing a table with a listing of a sequence of number of bits to be transmitted on certain channels, as well as a corresponding gain, does not make obvious the gain/bandwidth control called for by claim 1 of the present invention. In other words, merely listing predetermined gains to be implemented to particular channels does not make obvious the concept of monitoring a signal and then performing a gain bandwidth control process, which includes determining a bandwidth requirement of a signal path associated with a portion of the signal, as called for by claim 1 of the present invention. Therefore, claim 1 of the present invention is not taught, disclosed or made obvious by ***Shenoi***, ***Shapiro***, or their combination.

Further, regarding independent claim 12, which calls for receiving a signal using a first circuit and separating the plurality of signal paths based upon a characteristic of the signal path and then applying a corresponding gain using a second circuit is not made obvious by ***Shenoi***, ***Shapiro***, or their combination. Neither ***Shapiro***, ***Shenoi***, nor their combination disclose or make obvious any subject matter relating to applying a particular gain based upon separating a plurality of signal paths based upon a characteristic. As described above, ***Shenoi*** does not separate any signal paths based upon the characteristics of the signal path to apply a corresponding gain upon the signal path. ***Shenoi*** merely discloses a predetermined band pass filter for filtering upstream and downstream signals. ***Shenoi*** clearly does not disclose separating the plurality of signal paths based upon a characteristic of the signal path to apply a corresponding gain, as called for by claim 12, as amended, of the present invention. As described above, ***Shapiro*** does not make up for this deficit. Therefore, for at least the reasons cited above, all of the elements of claim 12 are not taught, disclosed, or made obvious by ***Shenoi***, ***Shapiro***, or their combination.

As provided above, simply listing several channels and corresponding bits to be transmitted and pre-selected gains for the channels, does not disclose or make obvious applying a gain on the signal path based upon separating a plurality of signal paths based on a characteristic. The mere listing of the data that is to be transmitted to be loaded on to particular channels does not teach, disclose or suggest determining the bandwidth requirement of a signal path. Therefore, various elements of claims 1 and 12 are not taught, disclosed or suggested by ***Shapiro***, ***Shenoi***, or their combination.

Shapiro merely relates to bit allocation among carriers in a multi-carrier communication. ***Shapiro*** is directed to listing channels and the respective number of bits to be loaded onto the channels in a gain for each of the channels. In contrast, ***Shenoi*** is directed to the ADSL line communications and providing gain sufficient to provide communication over long subscriber loops. Appellant respectfully asserts that without improper hindsight reasoning, those skilled in the art would not have combined ***Shapiro*** and ***Shenoi*** since the requisite motivation is not found in the prior art or known to those skilled in the art at the time of the invention of the present invention. Additionally, as described above, *arguendo,* even if those skilled in the art were to combine ***Shapiro*** and ***Shenoi*** at the time of the present invention, all of the elements would not be taught, disclosed or made obvious by ***Shapiro***, ***Shenoi*** or their combination.

For at least the reasons cited above, those skilled in the art would not combine ***Shapiro*** and ***Shenoi*** to make obvious all of the elements of any of the claims of the present invention. For similar reasons, the system called for by claim 18, is also allowable since neither ***Shenoi*** nor ***Shapiro*** disclose, teach or make obvious the subject matter of applying appropriate gain upon a signal based upon separating at least one signal path based upon the characteristics of the signal path.

Further, claim 24 calls for an apparatus that calls for performing a gain/bandwidth control process based upon monitoring of a signal, which includes determining a bandwidth requirement of a signal path associated with a portion of the signal, which is not taught, disclosed or made obvious by ***Shapiro***, ***Shenoi*** or their combination.

Further, Appellant respectfully asserts that those skilled in the art would not combine ***Shapiro*** and ***Shenoi*** in order to make obvious all of the elements of the claims of the present invention. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Third, there must be a reasonable expectation of success. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). As described above, ***Shapiro*** and ***Shenoi***, alone or in combination, do not teach or disclose all of the elements of claims of the present invention. Further, the Examiner has not offered evidence or arguments as to any reasonable expectation of success by the combination of ***Shapiro*** and ***Shenoi***. Additionally, the Examiner has not demonstrated sufficient motivation by those skilled in the art to combine ***Shapiro*** and ***Shenoi***. Therefore, the Examiner has failed to establish a *prima facie* case of obviousness of all of the elements of the claims of the present invention. Accordingly, claims 1-5, 12-16, and 24 of the present invention are allowable.

Independent claims 1, 12, and 24 are allowable for at least the reasons cited above. Additionally, all dependent claims including dependent claims 2-5, and 13-16, which

respectively depend from independent claims 1, and 12, are also allowable for at least the reasons cited herein.

B. Claims 6-11, 17-23, and 25 (Group II Claims) Are Not Rendered Unpatentable under 35 U.S.C. § 103(a) by *Shenoi* in view of *Shapiro*.

Appellant respectfully asserts that the Examiner did not meet the legal standards to reject claims 6-11, 17-23, and 25 of the present invention under 35 U.S.C. § 103(a) because the prior art references (***Shenoi*** and ***Shapiro***) do not teach or suggest all the claim limitations of the claims of the present invention. Additionally, the Examiner has not provided sufficient evidence or arguments that there is a suggestion that one skilled in the art would have been motivated to combine the references (***Shenoi*** and ***Shapiro***). In fact, Appellant provides arguments that ***Shenoi*** and ***Shapiro*** would not have been combined by one skilled in the art. Therefore, the Examiner did not meet the legal standards to establish a *prima facie* case for obviousness under 35 U.S.C. § 103(a) with regarding to claims 6-11, 17-23, and 25 of the present invention.

In addition to further elements described below, claims 6-11, 17-23, and 25 contain subject matter that are included in claims 1 and 12. Therefore, claims 6-11, 17-23, and 25 are allowable for at least the argument provided above with regards to claims 1 and 12. Additionally, claims 6-11, 17-23, and 25 contain method and/or apparatus subject matter relating to separating a signal path in response to an approximate length of the signal path and the bandwidth requirement, and applying an appropriate gain factor, are not taught, disclosed or suggested by the mere application of gain of ***Shenoi*** and/or ***Shapiro,*** or made obvious by the mere table listing of the number of bits to be downloaded onto a channel, and a predetermined

gain. Neither ***Shenoi*** nor ***Shapiro*** disclose or make obvious separating a signal path in response to approximate length of the signal path and the bandwidth requirement.

As described herein ***Shenoi*** is directed to an asymmetrical system being used for providing greater data transmission. ***Shenoi*** does not disclose or make obvious determining a bandwidth requirement for a signal path associated with a portion of a signal for controlling a gain of the portion of the signal, as called for by various claims of the present invention. Nor does ***Shenoi*** disclose separating a signal path in response to an approximate length of the signal path and the bandwidth requirement. Further, ***Shapiro*** does not make up for the deficit of ***Shenoi***. ***Shapiro*** is directed to reducing the number of symbol errors that result from individual channel errors by providing using symbol-oriented correction methodologies. ***Shapiro*** does not disclose or make obvious monitoring a signal and performing a gain/bandwidth control process based upon the signal, which includes determining a bandwidth requirement of a signal path. ***Shapiro*** does not disclose separating a signal path in response to an approximate length of the signal path and the bandwidth requirement. Accordingly, ***Shenoi***, Shapiro or their combination do not teach, disclose, or make obvious all of the elements of claims 6-11, 17-23, and 25 of the present invention. Accordingly, for at least the reasons cited above, claims 6-11, 17-23, and 25 of the present invention are also allowable.

Further, Appellant respectfully asserts that those skilled in the art would not combine ***Shapiro*** and ***Shenoi*** in order to make obvious all of the elements of the claim claims 6-11, 17-23, and 25 of the present invention. As described above, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally

available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Third, there must be a reasonable expectation of success. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). As described above, ***Shapiro*** and ***Shenoi***, alone or in combination, do not teach or disclose all of the elements of claims of the present invention. Further, the Examiner has not offered evidence or arguments as to any reasonable expectation of success by the combination of ***Shapiro*** and ***Shenoi***. Additionally, the Examiner has not demonstrated sufficient motivation by those skilled in the art to combine ***Shapiro*** and ***Shenoi***. Therefore, the Examiner has failed to establish a *prima facie* case of obviousness of all of the elements of the claims of the present invention. Accordingly, claims 6-11, 17-23, and 25 of the present invention are also allowable.

VIII. CONCLUSION

In view of the foregoing, it is respectfully submitted that the Examiner erred in not allowing all claims (claims 1-25) pending in the present application over the prior art of record. The undersigned attorney may be contacted at (713) 934-4069 with respect to any questions, comments, or suggestions relating to this appeal

Respectfully submitted,

Date: December 5, 2005

Jaison C. John, Reg. No. 50,737
WILLIAMS, MORGAN & AMERSON
10333 Richmond Dr., Suite 1100
Houston, Texas 77042
(713) 934-4069
(713) 934-7011 Fax
ATTORNEY FOR APPELLANT

VIII. CLAIMS APPENDIX

1. (Previously Amended) A method of improving at least one gain bandwidth path, comprising:

monitoring at least one signal being transmitted; and

performing a gain/bandwidth control process based upon said monitoring of said signal, performing said gain/bandwidth control process comprises controlling a gain of a portion of said signal based upon determining a bandwidth requirement of a signal path associated with said portion of said signal.

2. (Original) The method of claim 1, wherein monitoring at least one signal being transmitted further comprises determining whether said signal is a data signal.

3. (Original) The method of claim 1, wherein monitoring at least one signal being transmitted further comprises determining whether said signal is a voice signal.

4. (Original) The method of claim 1, wherein monitoring at least one signal being transmitted further comprises determining whether said signal is a DC signal.

5. (Original) The method of claim 1, wherein monitoring at least one signal being transmitted further comprises determining whether said signal is a ringing signal.

6. (Original) The method of claim 1, wherein performing a gain/bandwidth control process further comprises:

determining an approximate length of at least one signal path carrying said signal;

determining a bandwidth requirement of said signal path;

determining a gain factor to be applied upon said signal path;

separating said signal path in response to at least one of said approximate length of said signal path, said bandwidth requirement of said signal path, and said gain factor to be applied upon said signal path; and

applying an appropriate gain within said bandwidth upon said separated signal path.

7. (Original) The method of claim 6, further comprising summing said signal path in response to applying said gain upon said signal path to at least one other signal path.

8. (Previously Amended) The method of claim 6, wherein applying an appropriate gain within said bandwidth upon said separated signal path further comprises applying a gain of about 10 in a bandwidth of about 500 KiloHertz to about 5 MegaHertz in response to a determination that said signal path is a data signal path.

9. (Previously Amended) The method of claim 6, wherein applying an appropriate gain within said bandwidth upon said separated signal path further comprises applying a gain of about 3 in a bandwidth of about 200 Hertz to about 20 KiloHertz in response to a determination that said signal path is a voice signal path.

10. (Previously Amended) The method of claim 6, wherein applying an appropriate gain within said bandwidth upon said separated signal path further comprises applying a gain of about 140 in a bandwidth of about 100 Hertz to about 200 Hertz in response to a determination that said signal path is a DC signal path.

11. (Previously Amended) The method of claim 6, wherein applying an appropriate gain within said bandwidth upon said separated signal path further comprises applying a gain of about 140 in a bandwidth of about 100 Hertz to about 200 Hertz in response to a determination that said signal path is a ringing signal path.

12. (Previously Amended) An apparatus for improving at least one gain bandwidth path, comprising:

a first circuit portion capable of driving a signal onto a subscriber line; and

a second circuit portion electrically coupled with said first circuit portion, wherein said second circuit portion is capable of separating a plurality of signal paths based upon at least one characteristic of said signal path for applying a corresponding gain upon said signal path.

13. (Original) The apparatus of claim 12, wherein said first circuit portion further comprises at least one differential signal driver is capable of driving at least one of a voice signal, a data signal, a DC signal, and a ringing signal onto said subscriber line.

14. (Original) The apparatus of claim 12, wherein said subscriber line is a medium capable of transmitting signals.

15. (Original) The apparatus of claim 14, wherein said subscriber line is comprised of a subscriber loop.

16. (Previously Amended) The apparatus of claim 12, wherein said second circuit portion is a gain/bandwidth controller.

17. (Original) The apparatus of claim 16, wherein said gain/bandwidth controller further comprises:

a signal path separator capable of separating a signal path based upon at least one of said bandwidth requirement, signal accuracy requirement, and a signal path characteristic;

a plurality of gain/bandwidth circuits coupled with said signal path separator, said gain/bandwidth circuit being capable of applying an appropriate gain based upon said separation of said signal paths; and

a summer coupled with said plurality of gain/bandwidth circuits, said summer being capable of summing a plurality of signals from said plurality of gain/bandwidth circuits and producing an output signal.

18. (Previously Amended) A system for supporting voice band and data band communications, comprising:

a sum block capable of receiving at least one of a voice signal, a DC signal, a ringing signal, and a data signal;

at least one differential signal driver coupled to said sum block, wherein said differential signal drivers are capable of driving at least one of said voice signal, a DC signal, a ringing signal, and said data signal onto a subscriber line; and

a gain/bandwidth controller coupled with said sum block and said differential signal driver, wherein said gain/bandwidth controller is capable of separating at least one signal path based upon a characteristic of said signal path and applying an appropriate gain upon a signal on said subscriber line.

19. (Original) The system of claim 18, wherein said sum block is capable of receiving at least one of a:

DC ring signal;

a metering signal;

a voice signal; and

a data signal.

20. (Original) The system of claim 19, wherein said sum block is capable of summing two or more of said DC ring signal, said metering signal, said voice signal, and said data signal.

21. (Original) The system of claim 19, wherein said subscriber line is a medium capable of transmitting signals.

22. (Original) The system of claim 19, wherein said subscriber line is comprised of a subscriber loop.

23. (Original) The system of claim 18, wherein said gain/bandwidth controller further comprises:

a signal path separator capable of separating a signal path based upon at least one of said bandwidth requirement, signal accuracy requirement, and a signal path characteristic;

a plurality of gain/bandwidth circuits coupled with said signal path separator, said gain/bandwidth circuit being capable of applying an appropriate gain based upon said separation of said signal paths; and

a summer coupled with said plurality of gain/bandwidth circuits, said summer being capable of summing a plurality of signals from said plurality of gain/bandwidth circuits and producing an output signal.

24. (Previously Amended) An apparatus for improving at least one gain bandwidth path, comprising:

means for monitoring at least one signal being transmitted; and

means for performing a gain/bandwidth control process based upon said monitoring of said signal, said means for performing said gain/bandwidth control process comprises means for controlling a gain of a portion of said signal based upon determining a bandwidth requirement of a signal path associated with said portion of said signal.

25. (Previously Added) A method of improving at least one gain bandwidth path, comprising:

monitoring at least one signal being transmitted;

determining an approximate length of at least one signal path carrying said signal;

determining a bandwidth requirement of said signal path;

determining a gain factor to be applied upon said signal path;

separating said signal path in response to at least one of said approximate length of said signal path, said bandwidth requirement of said signal path, and said gain factor to be applied upon said signal path; and

applying an appropriate gain within said bandwidth upon said separated signal path.

IX. EVIDENCE APPENDIX

There is no evidence relied upon in this Appeal with respect to this section.

X. RELATED PROCEEDINGS APPENDIX

There are no related appeals and/or interferences that might affect the outcome of this proceeding.